

and potential bioavailability of trace metals. Thus, trace metals may become increasingly more available to the food chain through time by abundant filter and detritus feeding organisms living within the organic-rich mud environments. Kimerle (1987) concluded that some chemicals tend to strongly partition to sediments becoming sinks that "are acutely and chronically toxic to aquatic organisms". Gilford and Zeller (1987) have found that polluted sediments have impacted benthic organisms in areas where water column criteria were not violated.

TABLE 5. Comparison between detection limits for trace metal samples from North Carolina rivers (Barker et al., 1986) and average metal concentrations in the Mississippi River (Shiller and Boyle, 1987). > X = amount detection limits used for N.C. rivers are above average of Mississippi values.

ELEMENT	MISS RANGE nmol/kg	MISS AVE nmol/kg	NC DETECT LIMITS nmol/kg	> X
Cu	18.3 -30.9	22.7	160	7
Ni	20.5 -26.2	23.4	890	38
Zn	1.7 - 4.2	3.2	154	48
Cr	.4 - 2.8	1.6	470	294
Cd	.08- .2	0.13	80	615

Thus, analysis of the estuarine mud sediments represents a much easier and more reliable approach to determining the health of estuarine water quality for several reasons.

First, concentrations of critical toxic heavy metals are considerably enriched in the sediments compared to their dilute character within the water column; therefore they can be analyzed for and monitored with much more reliable results.

Second, the sediments represent a synthesis reflecting long-term assimilation that smooths out the extreme variability associated with collecting water samples; therefore they can readily pinpoint problem areas associated with various types of heavy metal sources.

Third, heavy metal analyses of organic-rich muds can be applied relatively cheaply and quickly to define potential problem areas; such problem areas often have a high potential of being enriched in other chemical components that may cause more serious water quality problems (i.e. organic toxins, many of which are difficult and costly to analyze for).